REMARKS

Claims 1-24 were examined.

Claims 14, 15, and 24 were indicated to be directed to allowable subject matter.

Claims 1-4, 9-12, 17-20 and 23 were rejected as anticipated by WOLFF 6,912,608.

Claims 5-8, 13, 21, and 22 were rejected as obvious in further view of WATANABE.

The previously pending claims have been replaced with new claims, directed to the same invention, with the features of the invention being clarified. Further, the recitations have been revised, e.g., as to the response substitution entity. Support for the amendments can be found at least in published application paragraphs [0005], [0008], [0037], [0042]-[0043], [0053], [0057], [0060], and [0061].

For example, claim 25 recites the inventive processing means for pipelined processing of data packets, said processing means comprising: an input (105) arranged to receive data packets (125); an output (115); a device (205); and a pipeline (110) connected between the input and the output.

The pipeline is recited as having i) on an input side (left side of 110), at least one processing stage (120) connected to receive the data packets from the input, ii) an access point (200a, Figure 3) connected to an output of said one processing stage (output of 120i), iii) a request channel (255,

210) connecting said access point to said device, said request channel comprising a transmit connection (210) for transmitting a request from said access point to said device and a receive connection (255) for said access point to receive a response from said device, said request being based on data processing information extracted from at least part of one of said data packets and any additional information associated with said one data packet, a first type of said request directing said device to perform a data processing operation which alters said one data packet, a second type of said request directing said device to perform a data processing operation which alters said any additional information associated with said one data packet, said response to said first type of said request including an alteration to said one data packet, said response to said second type of request including an alteration to said any further additional information associated with said one data packet.

Further the access point is recited as comprising

i) at least one FIFO store (250, 245) for storing data entering the access point, said data corresponding to said at least part of said one data packet and said any additional information associated with said one data packet,

ii) a response FIFO store (260) connected to said device via said receive connection, said response FIFO store for storing a first response corresponding to said request, said first response received on the receive connection,

iii) a synchronization mechanism (263) arranged to synchronize fetching of a first entry in said at least one FIFO store and the first response in said response FIFO store, said first entry corresponding to said at least part of said one data packet and said any additional information associated with said one data packet, and

iv) a response substitution entity (270) connected to receive a) said first response as an output of said response FIFO store and b) said first entry as an output of said at least one FIFO store, said response substitution entity arranged to form a resultant data packet by merging said received first response into said received first entry, said resultant data packet being an output of said access point (output to 120i+1, figure 3).

Claim 26 further recites that said input is a receiver (105), said output is a transmitter (115), said access point comprises plural of said request channel (Figure 7), and said access point (200b, Figure 7) provides simultaneous access to plural of said device via said plural request channels, in response to the request from said access point, each said device adapted to perform a corresponding data processing operation which alters at least a part of one of i) a corresponding data packet and ii) a corresponding additional information associated with the corresponding data packet. Additionally, there is recited a further access point is connected intermediate an output side of the input and the input side of the one processing

stage such that the one processing stage is connected to receive data packets input via the further access point (see published application paragraph [0064]).

No new matter is entered by way of these amendments.

Accordingly, examination of claims 25-47 is solicited. As the features recited in these claims are both novel and non-obvious over the prior art, allowance of all the claims is solicited.

A brief review of WOLFF may be useful.

Figure 3A of Wolff shows a local client wherein received packets destined to an external downstream client are buffered in their entirety in a buffer 300 and wherein received packets destined locally and not to be passed to the downstream client is buffered in a buffer (304), see column 6, lines 25-38. Thus, there is no correspondence between the buffers 300, 304 of Wolff and the FIFO stores (245, 250; 260) of the present invention, since e.g. buffer 304 of a specific client does not store responses to requests sent to an external device based on data stored in buffer 300 of the same specific client.

Further, Wolff is silent of such a synchronization as the one disclosed by the present invention.

Regarding the synchronization, the Official Action refers to Wolff column 1, lines 30-51, wherein the pipelined bus is described to have a fully synchronous, packet-switched, split-transaction data transfer model, i.e., that the pipelined bus is

synchronous and that bus of Wolff transfers data at bus clock speeds. This is completely different from the synchronisation of the recited present invention, wherein a synchronisation mechanism is adapted to synchronize the fetching of the first entry in said FIFO store (245, 250) and the first response in said response FIFO store (260), said first entry corresponding to said at least part of one of said data packet and any additional information associated with said data packet, and wherein a response substitution entity is configured to merge said first response into said at least part of one of said data packet and any additional information associated with said data packet.

Referring to new claim 25, WOLFF does not disclose the recited access point. Specifically, the Official Action offers column 7, lines 28-37 for discloses an access to a device.

This passage fairly discloses that WOLFF uses a packet-switched multi-cycle bus where all information is transferred in single or indivisible multi-cycle packets, with each packet preferably consisting of one header packet and a variable number of data packets. The header information is sent on the header control lines, and the first data is sent coincidentally on the data signals as shown in a timing diagram 500 of FIG. 5.

This passage does not disclose, nor do the drawings illustrate, an access point as recited.

The recited access point is connected to an output of a processing stage, with a request channel connecting the access

point to the device. Although the Official Action points to some general function capabilities of WOLFF, applicant can find no disclosure of this recited access point arrangement.

Claim 25 recites that the request channel comprises a transmit connection for transmitting a request from said access point to said device and a receive connection for said access point to receive a response from said device, said request being based on data processing information extracted from at least part of one of said data packets and any additional information associated with said one data packet, said request directing said device to perform a data processing operation which alters said one data packet, said response including an alteration to said one data packet.

The Official Action refers to WOLFF column 7, lines 47-65. However, this passage does not disclose the immediately preceding feature. Rather, this passage discloses that transactions on the pipelined bus are initiated by originator clients and serviced by destination clients using a generalized request packet and receiving a read reply packet. There recited transmit connection and receive connection are not disclosed or illustrated. More particularly, the data processing information being extracted from the received data packet is not found.

Claim 25 includes further specifics not disclosed by WOLFF.

Previously the Official Action offered buffer 304 as satisfying the recited FIFO store. As disclosed WOLFF, buffer 304 is for a local client 202 where received packets destined locally and not to be passed to the next client are stored in buffer 304. Such a buffer does not satisfy claim 25 which now requires the access point comprise a FIFO store for storing data entering the access point, and a synchronization mechanism arranged to synchronize fetching of a first entry in this FIFO store, and a response substitution entity that receives and merges the device response and the first entry to form a resultant data packet.

The other independent claims have similar features as those discussed with respect to claim 25. Accordingly, each independent claim is allowable. The dependent claims are allowable at least for depending from an allowable claim. The features of the dependent claims therefore need not be discussed further.

Reconsideration and allowance of all the claims are respectfully requested.

This amendment is believed to be fully responsive and to put the case in condition for allowance. Entry of the amendment, and an early and favorable action on the merits is earnestly requested. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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